

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-12 (cancelled)

13. (currently amended) A method of identifying an agent that alters lifespan of a eukaryotic cell, the method comprising:

- a) providing a eukaryotic cell characterized by a first replicative capacity for cell division;
- b) contacting the eukaryotic cell with an agent to provide a treated eukaryotic cell; and
- c) evaluating a phenotype of the treated eukaryotic cell, in the presence of the agent, wherein the phenotype (i) is correlated with replicative capacity for mitotic division, (ii) is other than mitotic division replicative capacity itself, and (iii) is a function of stress survival, and wherein an alteration in the phenotype, relative to a corresponding phenotype of a eukaryotic cell not contacted with the agent, indicates the agent as an agent that alters lifespan; and
- d) evaluating replicative capacity of the treated eukaryotic cell in the presence of the agent, wherein modulation of the phenotype and replicative capacity, relative to a corresponding phenotype and capacity of a eukaryotic cell not contacted with the agent, identifies the agent as an agent that alters lifespan of a eukaryotic cell.

14. (withdrawn) The method of claim 13 wherein the phenotype is a function of growth to higher saturation density than the cells provided in (a).

15. (previously presented) The method of claim 13 wherein the phenotype is heat shock resistance.

16. (withdrawn) The method of claim 13 wherein the phenotype is starvation resistance.
17. (withdrawn) The method of claim 13 wherein the phenotype is paraquat resistance.
18. (withdrawn) The method of claim 13 wherein the phenotype is caffeine resistance.
19. (canceled)
20. (previously presented) The method of claim 13 wherein the eukaryotic cell is a yeast cell.
21. (currently amended) The method of claim 13 wherein the eukaryotic cell is a genetically-altered eukaryotic cell which has a different replicative capacity ~~for mitotic division~~ relative to a reference eukaryotic cell.
22. (currently amended) The method of claim ~~19~~ 13 wherein the step d) of evaluating comprises: (i) calculating the number of divisions of the treated eukaryotic cell, and (ii) comparing the number of divisions in (i) with the average number of divisions for the eukaryotic cell in the absence of the agent to be tested.
23. (withdrawn) The method of claim 20 wherein the phenotype is a function of growth to higher saturation density than the eukaryotic cell provided in (a).
24. (previously presented) The method of claim 20 wherein the phenotype is heat shock resistance.
25. (withdrawn) The method of claim 20 wherein the phenotype is starvation resistance.

26. (withdrawn) The method of claim 20 wherein the phenotype is paraquat resistance.
27. (withdrawn) The method of claim 20 wherein the phenotype is caffeine resistance.
28. (previously presented) The method of claim 13 wherein the treated eukaryotic cell is labeled on the cell surface, and the step c) of evaluating comprises detecting the labeled, treated eukaryotic cell.
29. (currently amended) The method of claim 13 wherein the treated eukaryotic cell is cultured for a period of time greater than time sufficient for the first replicative capacity-of-cell division.
30. (previously presented) The method of claim 28 wherein the treated eukaryotic cell is fluorescently labeled.
31. (withdrawn) The method of claim 16 wherein the step c) of evaluating comprises maintaining the treated eukaryotic cell under starvation conditions.
32. (new) The method of claim 13 wherein the agent is a drug.
33. (new) The method of claim 13 wherein the agent is a peptide.
34. (new) The method of claim 13 wherein the agent is an oligonucleotide.
35. (new) The method of claim 21 wherein the genetically altered eukaryotic cell comprises a mutation in a chromosomal gene.
36. (new) The method of claim 13 wherein the agent is other than a gene.

37. (new) A method of identifying an agent that alters lifespan of a eukaryotic cell, the method comprising:

- a) providing a eukaryotic cell characterized by a first replicative capacity-;
- b) contacting the eukaryotic cell with an agent to provide a treated eukaryotic cell;
- c) evaluating a phenotype of the treated eukaryotic cell, wherein the phenotype is stress survival; and
- d) evaluating replicative capacity of the treated eukaryotic cell, wherein modulation of replicative capacity is due to the presence or absence of the agent as opposed to mutation induced by the agent and wherein modulation of the stress survival phenotype and replicative capacity identifies the agent as an agent that alters lifespan of a eukaryotic cell.

38. (new) The method of claim 37 wherein the phenotype is heat shock resistance.

39. (new) The method of claim 37 wherein the eukaryotic cell is a genetically-altered eukaryotic cell which has a different replicative capacity relative to a reference eukaryotic cell.

40. (new) The method of claim 39 wherein the genetically altered eukaryotic cell comprises a mutation in a chromosomal gene.

41. (new) The method of claim 37 wherein the step d) of evaluating comprises: (i) calculating the number of divisions of the treated eukaryotic cell, and (ii) comparing the number of divisions in (i) with the average number of divisions for the eukaryotic cell in the absence of the agent to be tested.

42. (new) The method of claim 37 wherein the treated eukaryotic cell is labeled on the cell surface, and the step c) of evaluating comprises detecting the labeled, treated eukaryotic cell.

43. (new) The method of claim 42 wherein the treated eukaryotic cell is fluorescently labeled.

44. (new) The method of claim 37 wherein the treated eukaryotic cell is cultured for a period of time greater than time sufficient for the first replicative capacity.

45. (new) The method of claim 37 wherein the agent is a drug.

46. (new) The method of claim 37 wherein the agent is a peptide.

47. (new) The method of claim 37 wherein the agent is an oligonucleotide.

48. (new) The method of claim 37 wherein the agent is other than a gene.